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EXAMINER

PADGETT, MARIANNE L

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| ART UNIT | PAPER NUMBER |
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1762

DATE MAILED: 05/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/882,191

Applicant(s)

Shishido et al

Examiner

M.L. Padgett

Group Art Unit

1762

— The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address —

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- ☒ Responsive to communication(s) filed on 4/23/04 + 3/24/04
- ☐ This action is **FINAL**.
- ☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- ☒ Claim(s) 1-50 is/are pending in the application.
- Of the above claim(s) 31-50 is/are withdrawn from consideration.
- ☐ Claim(s) _____ is/are allowed.
- ☒ Claim(s) 1-30 is/are rejected.
- ☐ Claim(s) _____ is/are objected to.
- ☐ Claim(s) _____ are subject to restriction or election requirement

Application Papers

- ☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.
- ☒ The drawing(s) filed on 4/2/01 is/are objected to by the Examiner
- ☒ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

- ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119 (a)-(d).
- ☐ All ☐ Some* ☐ None of the:
- ☐ Certified copies of the priority documents have been received.
- ☐ Certified copies of the priority documents have been received in Application No. _____.
- ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

Attachment(s)

- ☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). (3/24/04)
- ☐ Interview Summary, PTO-413
- ☒ Notice of Reference(s) Cited, PTO-892
- ☐ Notice of Informal Patent Application, PTO-152
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Other _____

Office Action Summary

1. Applicant's election with traverse of Group I method claims 1-30 in Paper No. April 28, 2004 is acknowledged. The traversal is on the ground(s) that each feature of the claimed apparatus finds a counter part limitation in the process claims, and that "this is just another arbitrary attempt by the Patent Office to extract additional searching fees from the applicants without any real justification". This is not found persuasive because: (i) the examiners do not receive any fees or have time adjusted based on fees, but issues created by different statutory classes create extra work throughout the prosecution without any more time to do it in when they are all examined in one case, i.e., extra work without in the same amount of time; (ii) having like means used in both apparatus and process does not mean that only the methods claimed may be performed in the apparatus, and applicant has not shown that other processes than substrate treatment, such as powder formation, cannot be performed. The limitations of the apparatus concerning gas treatment are equally applicable to pure gas treatment with no substrate involved, etc. as previously stated, which corresponds to process searches not required for group I, but the apparatus must be searched for like structure regardless of ultimate enduse. The requirement is still deemed proper and is therefore made FINAL.

2. Applicant's IDS of March 24, 2004 is made of record, however it is noted that no Japanese reference numbered 5-218174 was supplied, however there was an 8-218174 which does concern the correct topic of gas exhaust treatment, so the numbers on the IDS was changed to correspond to the supplied reference, which is also referred to on page 6 of the specification.

3. The disclosure is objected to because of the following informalities: Fig. 2 is discussed in the background (pages 3-6 and 8) and in the "Brief Descriptions...", where it is

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referred to as "as one of representative...apparatuses", and appears to be prior art, so should be clearly referred to as such.

Appropriate correction is required.

The drawings are objected to because if Fig. 2 is prior art, it should be labeled as such. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

4. Claims 3, 8, 10, 12-14, 17, 22, 24 and 26-28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Use of relative terms that lack clear metes and bounds in the claims, or in a definition in the specification or in relevant cited prior art, is vague and indefinite. In claims 3 and 17, see "high". While it is noted that pages 12 and 22 use the term and list examples, such as claimed in 4 or 18, there is given no limit as to what necessarily constitutes a "high melting point". Note that examples are NOT a definition, so it is unclear what else beside the metals of claim 4 read on claims 3 or 17.

In claims 8 and 22, what is meant by "similarly"? How is the material used, which not exactly the same? How might it differ, or is this a transnational error, that should perhaps read as --also--?

In claims 10 and 24 "spirally-wound linear members" is a self-contradictory description. How can the object claimed be both linear and spiraled at the same time?

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In claims 12-14 and 26-28, in what way is the "member" like a plate and how might it differ. Is it planar, or is it shaped like a dinner plate, or what? The scope or metes and bounds of the term "plate-like" is unclear.

5. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

6. Claims 1-5, 10, 15-19, 24 and 29-30 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-2, 5-8, 39, 41-42 and 44 of copending Application No. 10/776,173. Although the conflicting claims are not identical, they are not patentably distinct from each other because while the wording or paraphrasing differs between the sets of claims and the order in which limitations are claimed varies, overlapping processes for treating exhaust gas from a process, that is plasma in the present case, and may be plasma in (173), are claimed in both cases, constituting obvious variations. The (173) application uses different wording for the reaction inducing means of the present cases, calling it a filament in claim 1, but both claim the same metals, with the physical description of this case being consistent with a filament or in the set of claims based in claim 39 in (173), the reaction by a heat generating means overlaps.

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While the (173) patent is narrower than the present claim in its claim 1's requirement to process inside "trap means", this limitation is not excluded by the current cases claims, which place no limit on what happens when the chemical reaction is induced and are broadly inclusive of such possible results, especially as it would have been obvious to one of ordinary skill that in order to treat exhaust one must first contain it, i.e. trap it.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

7. The copending case of Patent 6,223,684 B1 to Fujioka et al cited in applicants' IDS is noted to be directed to overlapping subject matter, but since all of its claims are to apparatus, which are non-elected in this case, there are no double patenting issues to consider at this time.

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 1-3, 15-17 and 29-30 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Chiu (4,735,633).

Chiu teaches treatment of vapor phase waste from processes inclusive of plasmas CVD or plasma etching, via a plasma extraction reactor placed in the exhaust line, such as before parts of the vacuum pump system. The electrodes of the system cause chemical reactions, that vary according to the waste being treated, but are generally employed to cause deposition on the electrodes or to convert nitric oxides or the like to N_2 and O_2 . The plasma process may cause heating up to 500°C , and it is taught that virtually any conductive metal or alloy may be employed, but that inexpensive ones are preferred, so that they are disposable. See the abstract; figures; column 1, lines 6-24 (and lines 65, column 2, line 58 for prior art plasma exhaust treatments); summary; column 4, lines 11-30 for types of reactors for which waste may be treated and lines 30-55 for treatment chemistry. Electrode materials, plasma extractor location options and operating temperatures are on column 5, line 60- column 6, line 24.

Note that while "high melting point" metals are not discussed with respect to the electrodes, all conductive metals are essentially taught as useful therefore, hence the limitation is

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covered. But also, since "high" is not defined; 500°C can be considered high; and Chiu's electrodes do NOT melt under such use, they can be said to be made of high melting point metals.

10. Claims 1-3, 5, 12-13, 15-17, 19, 26-27 and 29-30 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Pang et al (6,194,628 B1).

Pang et al teach plasma treating exhaust from semiconductor processing, such as plasma CVD or plasma etching, where various downstream plasma cleaning apparatus (DPA) 40, may be employed, with Figures 5 and 6 illustrating ones that employ conductive metal coils (and wire in Fig. 6) used in producing their treating plasma, which causes chemical reactions that break down particulates and buildup in the exhaust line. Fig. 2 shows the susceptor 12 and wafer in the plasma processing apparatus, surrounded by baffle plate 17, which has a plurality of spaced holes 23 which exhaust into annular vacuum manifold 24, which configuration inherently acts as the claimed plasma blocking means between plasma chamber 15 and the DPA, that is equivalent to the claimed chemical reaction inducing means. Note that passing of current through coils, etc. in producing the downstream plasma will inherently cause heating to occur, and above discussions of "high" also applies. Particularly see the abstract; column 1, line 5-10⁺; summary; column 3, line 50- columns 4, line 53, esp. lines 11-17 and 35-48; column 6, lines 6-40; column 8, line 39- column 10, line 65 for the embodiments of Figures 5 and 6, esp. column 8, lines 46-60; column 9, line 65- column 10, line 36 and 50-55 for various options concerning the coil electrodes and wire.

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11. Claims 1-4, 15-18 and 29-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ikeda et al (JP 8-299784) in view of Tanimura Shoich (JP 04-136,175) or Chiba Hideshige et al (JP 08-218174).

Ikeda et al teach treating exhaust from metal-CVD processor apparatus, using an electrical heating coil or heated baffles with electrical coils or heating wires on them to cause residual gases in the exhaust to chemically react and deposit their metal, thus protecting the vacuum pumps downstream therefrom. The conductive material used for this heating may be the metal tungsten. Particularly see the English abstract; Figures where 2, 3, 5-7, 9 and 10-12 show relevant heater structures; and in the machine translation see [0002] noting treatment of exhaust from both film forming & etching process, [0004], [0009-10], [0020-21]+ with [0024]+ discussing use of heater in traps 24 in the flueway (exhaust line); and [0031-32] discussing, baffles and conductive materials.

Ikeda et al differs by not discussing the use of the exhaust gas processing system with plasma CVD or plasma etching process, with their exemplary process apparatus of Fig. 1 being either a photo or thermal CVD reactor.

Both the secondary references have exhaust treatment systems, that may be employed with processing reactors that are either thermal CVD or plasma CVD. In Tanimura, see the JPO English abstract and figures. Note Fig. 3 suggests exhaust treatment system in the pipeline instead of around it, but while a translation has been order to enable review of these features, it has not yet been received. In Chiba et al, see the JPO English abstract; [0014-16], [0020-22] and [0026], plus Fig. 1. It would have been obvious to one of ordinary skill in the art from the teaching of Tanimura or Chiba et al, that plasma processing operations as well as thermal CVD

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have equivalent need of treating exhaust gases, and that the particular form of treatment, whether to totally decompose or to cause deposition depends in part on the particular reagents and by-products to be treated, but that like exhaust treatments are applicable, whether the initial process uses thermal or plasma processing.

12. Gabriel (6,361,706 B1) and Tsuji (5,569,810) are of interest for further plasma treatment of [plasma] processing exhaust, but employ inductively coupled electrodes on the exterior of the flow line. The machine translation is supplied for Mayagi et al (JP 7-130674), which is noted to be equivalent to Ikeda et al for claims 1-3 and 15-17 for the claims as written.

13. Claims 5-14 and 19-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chiu or Pang et al; or Ikeda et al in view of Tanimura or Chika et al as applied to claims 1-4, 15-18 and 29-30 as appropriate above, and further in view of Kanai et al (5,976,257).

The primary reference of Chiu or Ikeda et al do not discuss or show any features equivalent to the claimed plasma blocking means, and Pang et al only shows a basic structure capable of providing such with little discussion thereon. Kanai et al (257), who is plasma CVD processing substrates, teach on column 21, line 54- column 22, line 42; column 13, line 53-60, and column 14, lines 35-49, the need to confine the plasma to the chamber and prevent it from leaking into the exhaust line, where structures such as metal meshes, "punching boards", slits, etc., are taught to be effective for such purposes. It would have been obvious to one of ordinary skill in the plasma art, that such configurations and resultant confinement of the plasma to the processing reactor would have been equally applicable and desirable in the processing apparatus of the primary references, as they to are making electronic (semiconductor devices), which

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would equally have been adversely effected by such leakage, and would have been expected to derive equivalent benefit from adequate or ensured plasma confinement.

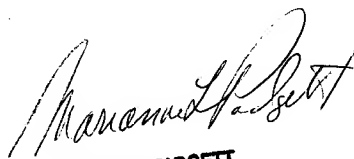
14. Other art that has plasma blocking means discussed or illustrated includes Hori et al (5,897,332); Kanai et al (5,130,170 and 5,468,521).

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marianne L. Padgett whose telephone number is (571) 272-1425. The examiner can normally be reached on Monday-Friday from about 8:30 a.m. to 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive Beck can be reached on (571) 272-1415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

M.L. Padgett/dh
May 25, 2004
June 2, 2004



MARIANNE PADGETT
PRIMARY EXAMINER